

## PART 1 - GENERAL

### 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

#### AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A108.1	(1992) Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar
ANSI A108.4	(1992) Ceramic Tile Installed with organic Adhesives or Water-Cleanable Tile Setting Epoxy Adhesive (Available only as part of ANSI A108.1)
ANSI A108.5	(1992) Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar (Available only as part of ANSI A108.1)
ANSI A108.6	(1992) Ceramic Tile Installed with Chemical-Resistant, Water-Cleanable Tile Setting and Grouting Epoxy (Available only as part of ANSI 108.1)
ANSI A108.10	(1992) Installation of Grout in Tilework (Available only as part of ANSI A108.1)
ANSI A118.1	(1992) Dry-Set Portland Cement Mortar (Available only as part of ANSI A108.1)
ANSI A118.4	(1992) Latex-Portland Cement Mortar (Available only as part of ANSI A108.1)
ANSI A137.1	(1988) Ceramic Tile

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 144	(1997) Aggregate for Masonry Mortar
ASTM C 150	(1997; Rev. A) Portland Cement
ASTM C 206	(1984; R 1997) Finishing Hydrated Lime
ASTM C 207	(1991; R 1997) Hydrated Lime for Masonry Purposes

## 1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

### 1.2.1 SD-04, Samples

- a. Ceramic floor tile and grout
- b. Ceramic wall tile and grout

## 1.3 DELIVERY, STORAGE, AND HANDLING

ANSI A108.1, ANSI A108.4, ANSI A108.5, and ANSI A108.6, Section A-1.

## 1.4 ENVIRONMENTAL CONDITIONS

ANSI A108.1, ANSI A108.4, ANSI A108.5, and ANSI A108.6 Section A-1 as modified herein. Do not start tile work unless the ambient temperature in work area is at least 50 degrees F and rising. Maintain the ambient temperature above 50 degrees F while work is in progress and for at least 3 days after its completion. For the installation and subsequent cure of chemical-resistant epoxy and furan mortars, the temperature shall be at least 60 degrees F and rising for a period of time recommended by the manufacturer. Do not use adhesives in unventilated areas.

## 1.5 EXTRA STOCK

Supply an extra two percent of each type tile used in clean and marked cartons.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

ANSI A108.1, ANSI A108.4, ANSI A108.5, and ANSI A108.6 Section A-2.

#### 2.1.1 Tile

ANSI A137.1, Standard Grade.

##### 2.1.1.1 Color and Patterns

Tile colors and patterns shall be as selected from the manufacturer's full line of color samples.

##### 2.1.1.2 Ceramic Floor Tile

- a. Unglazed ceramic tile: ANSI A137.1, porcelain or natural clay, with grooved or figured face cushioned edges.

Nominal Facial Dimensions in inches:	Nominal Thickness in inches:
12 x 12	5/16

### 2.1.1.3 Wall Tile

- a. Glazed wall tile: ANSI A137.1, matte finish with cushioned edges.

Nominal Facial Dimensions in inches:	Nominal Thickness in inches:
6 by 6	5/16

### 2.1.1.4 Trim Units

Provide matching trim units with tile work. Provide where indicated for a complete and finished installation. Provide bullnose units for wainscots, except where wainscot is flush with abutting wall surface. Provide up-and-down corners with bullnose units where there is a break in wainscot height, or where the wainscot does not terminate against projecting construction. Provide coved base units for wainscots, and 4 inch coved base units for tile floors where wainscots are not provided. Internal corners shall be squared and external corners rounded using appropriate matching trim units.

### 2.1.2 Hydrated Lime

ASTM C 206, Type S; or ASTM C 207, Type S.

### 2.1.3 Aggregate

ASTM C 144, except sand for grout shall pass a number 16 sieve.

### 2.1.4 Water

- a. Clean, potable.

### 2.1.5 Portland Cement

ASTM C 150, Type 1, white for grout, gray for other uses.

### 2.1.6 Membrane or Cleavage Membrane

ANSI A108.1, ANSI A108.4, ANSI A108.5, and ANSI A108.6, Section A-2.

### 2.1.7 Metal Dividing Strips

Heavy-top terrazzo type, brass or zinc alloy, approximately 1/16 inch thick with 1/4 inch thick top, and depth equal to thickness of tile.

### 2.1.8 Mortars and Grouts

#### 2.1.8.1 Mortar, Tile Setting

- a. Dry-set portland cement mortar: ANSI A118.1, factory sanded.
- b. Latex-portland cement mortar: ANSI A118.4.

#### 2.1.8.2 Grout

- a. Dry set: ANSI A118.1, factory sanded.
- b. Latex-portland cement: ANSI A118.4.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

Do not start tile work until roughing in for plumbing, heating, ventilating, air conditioning, and electrical work has been installed and tested; and built-in bathtubs, shower stalls, and membrane waterproofing have been installed and tested.

#### 3.2 PREPARATION

##### 3.2.1 Concrete Subfloor Preparation

Do not begin floor tile installation in areas receiving wall tile until wall tile installation has been completed.

##### 3.2.1.1 Structural Slabs With Limited Bending

Prepare in accordance with ANSI A108.5. Before applying tile with dry set mortar, test structural concrete floor for levelness or uniformity of slope by using straightedges. Fill areas where the floor does not meet the required tolerances and level in accordance ANSI A108.5

##### 3.2.1.2 Slab on Grade Construction Where No Bending Stresses Occur

Prepare in accordance with ANSI A108.5.

##### 3.2.2 Preparation of Mortar Mixes

Measure mortar materials in approved containers to ensure that proportions of materials will be controlled and accurately maintained. Measuring materials with shovels is not permitted. Unless specified otherwise, mix mortar in proportions by volume in approved mixing machines or mortar boxes. Control the quantity of water accurately and uniformly.

#### 3.3 INSTALLATION

##### 3.3.1 Floor Tile

- a. Dry-set mortar: ANSI A108.5.
- b. Latex-Portland cement mortar: ANSI A108.5.

##### 3.3.2 Wall Tile

Wall surfaces receiving ceramic tile set with dry-set mortar or latex-portland cement mortar shall have square corners, be plumb and true, with variations not exceeding 1.25 millimeters per meter 1/8 inch in eight feet from the required plane.

- a. Portland cement mortar: ANSI A108.1 glazed wall tile.
- b. Dry-set mortar: ANSI A108.5.
- c. Latex-portland cement mortar: ANSI A108.5.

Clean in accordance with the manufacturer's recommendations.

### 3.3.3 Joints

Make parallel, plumb, level, and in alignment. Make end joints in broken-joint work on center lines of adjoining tiles, as far as practicable. Set square tiles with straight joints, and set oblong tiles with broken joints.

#### 3.3.3.1 Joint Width

Make joints uniform in width and space to accommodate tile with a minimum of cutting, but maintain standard mounting widths between units abutting sheets of mounted ceramic mosaic tile. Make joint widths as follows:

- a. Mounted tile: As determined by the mounted tile spacing.
- b. Unmounted Glazed Wall Tile: As determined by spacing lugs.
- c. Trim units and accessories: Match adjoining tile units.

#### 3.3.3.2 Grouting and Pointing Joints

Factory premixed colored grout. Color shall be selected from Manufacturer's full line of color samples.

- a. Grout tile in accordance with ANSI A108.10.

#### 3.3.3.3 Expansion and Control Joints

Provide expansion and control joints in tile work in accordance with ANSI A108.1, ANSI A108.4, ANSI A108.5 and ANSI A108.6 and where indicated. Install expansion and control joints as follows:

- a. Insert preformed joint filler or back-up material in joints to proper depth to provide correct cavity depth for sealant.
- b. Prior to grouting, keep joints open and clean by stuffing with paper or other material to prevent filling with dirt, grout, or mortar.

After tile is grouted and completely dry, remove paper or other temporary filler material; brush joints clean and fill with back-up material and sealant as specified in Section 07920, "Joint Sealants."

### 3.3.4 Metal Dividing Strips

Install dividing strips in mortar setting bed while bed is in a plastic state. Set dividing strips where indicated in straight, unbroken lines, flush with unfinished floor surface. Provide dividing strips at joints where floor tile abuts and is flush with other types of floor finishes, except at doors where thresholds are provided.

### 3.3.5 Curing

Cover floors with 30 pound natural kraft paper with joints overlapping at least 4 inches and tape-sealed or held down with planks or other weights. Allow to damp cure for at least 72 hours before permitting foot traffic on tiled floor. Cure in accordance with ANSI A108.5.

### 3.4 CLEANING

Clean in accordance with ANSI A108.1, ANSI A108.4, ANSI A108.5, and ANSI A108.6, Section A-3. Acid cleaning of unglazed tile when necessary, shall be done no sooner than 14 days after setting tile.

### 3.5 PROTECTION

Meet the requirements of ANSI A108.1, ANSI A108.4, ANSI A108.5, and ANSI A108.6 Section A-3. Cover finished tile floors with clean, 30 pound natural kraft paper before permitting foot traffic. Place board walkways on floors that are to be continuously used as passageways by workers. Cover marble stools and thresholds with boards. Protect tiled corners, external angles, with board corner strips in areas used as passageways by workers.

END OF SECTION